

# National Weather Service

**Genevieve Miller**  
**WFO Guam**



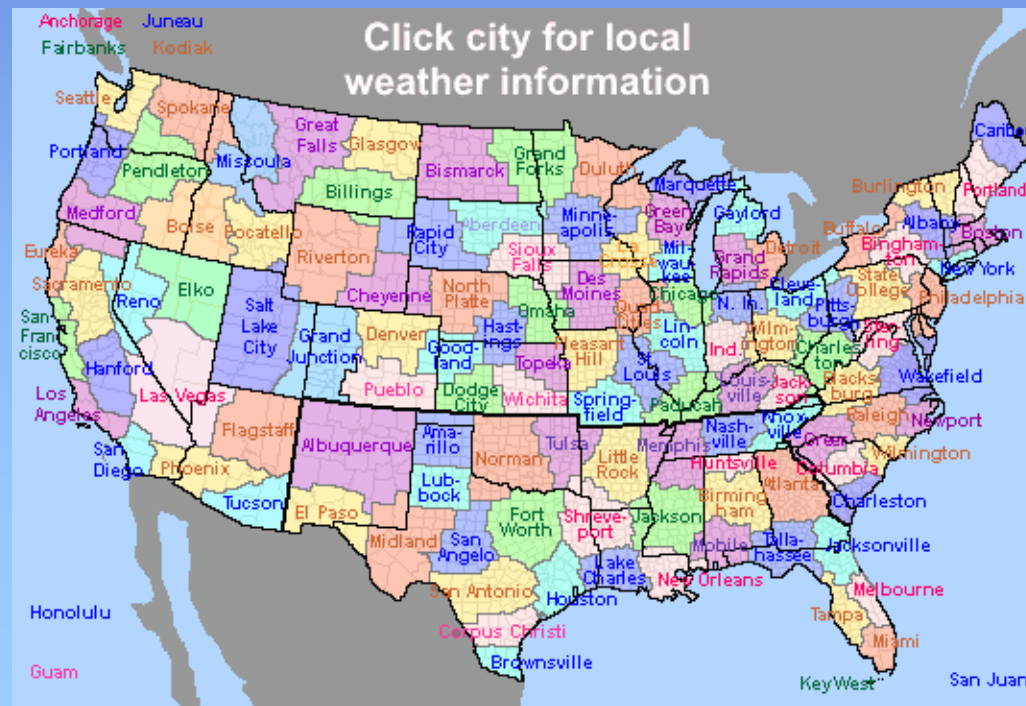
Pacific Aviation Directors Workshop  
April 4-6, 2006



# Overview of the National Weather Service (NWS)



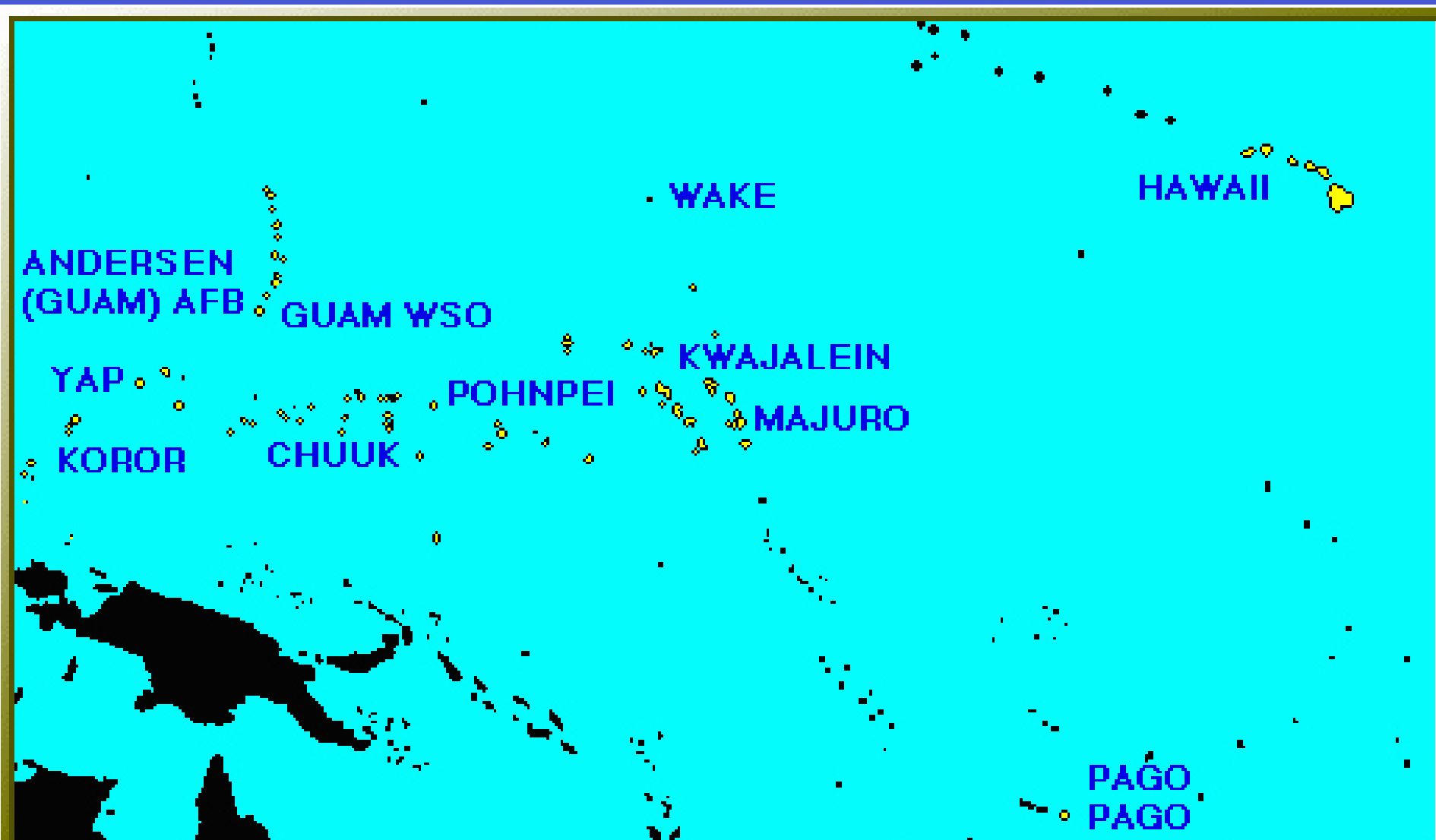
- Established 1898 as the Weather Bureau
- Now a part of the Department of Commerce and NOAA
- NWS consists of 122 forecast offices, including one in Guam and Honolulu



# NWS Mission

- *The National Weather Service provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, for the protection of life and property and the enhancement of the national economy.*

# NWS in the Pacific



# Observation Tools - Ground Level

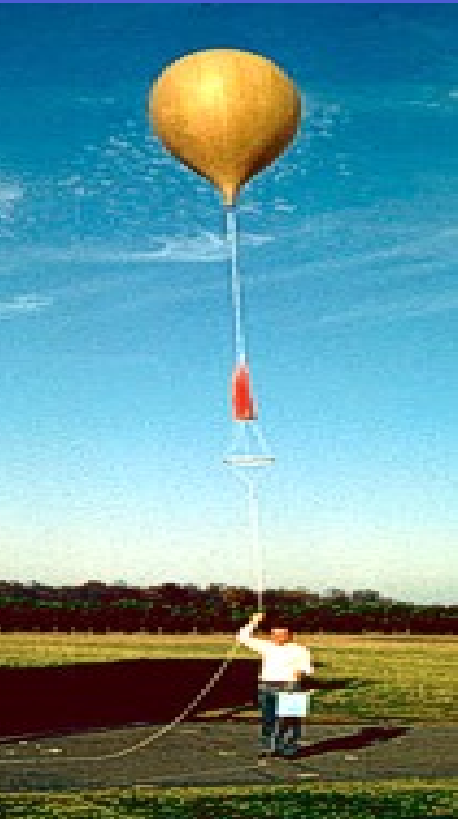
## *Automated Surface Observation System (ASOS)*

- Rainfall
- Temperature/Dewpoint
- Weather
- Wind
- Sky Cover
- Freezing Rain
- Thunderstorm
- Visibility
- Pressure

- Guam
- Saipan



# Observations - Upper Air



- For > 60 yrs, radiosondes have been used to measure the profiles of pressure, temperature, humidity and also winds.



# WSR-88D

*World's most powerful radar*

- 28-foot diameter antenna transmits and receives energy (750,000 Watts)
- While rotating, samples up to 14 elevation scans in the atmosphere
- Range of 250 miles
- In addition to capabilities of older radars, can also identify rotation and strong winds inside of thunderstorms



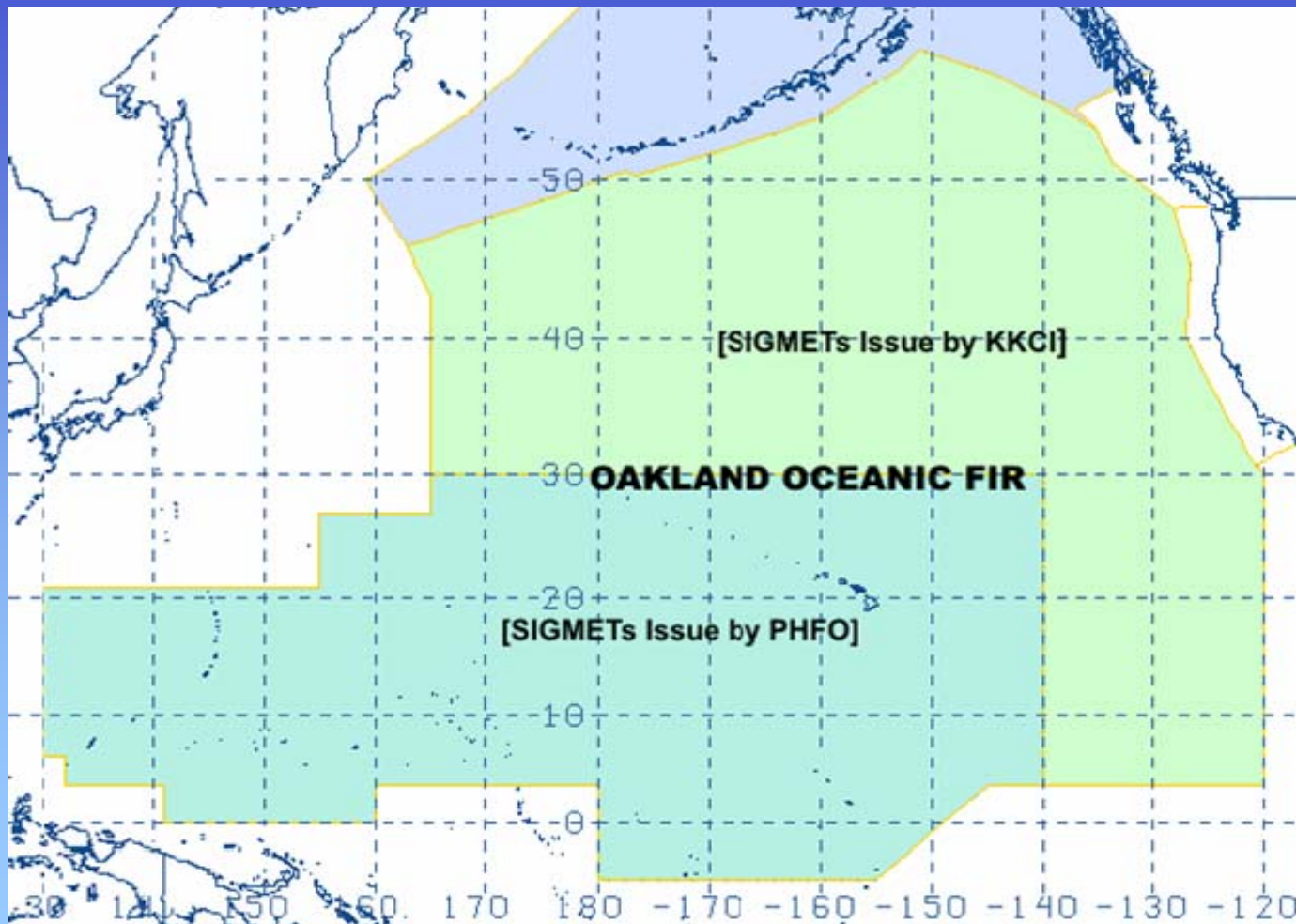
# Aviation Products

- **Area Forecast**
- **Terminal Aerodrome Forecasts (TAFs)**
- **Upper Winds and Temperatures Aloft (NCEP)**
- **AIRman's METeorological Advisory (AIRMET)**
- **SIGNificant METeorological Information (SIGMET)**



# SIGMETs

**Covers that portion of the Oakland Oceanic FIR south of 30N latitude.**



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# **Significant Meteorological Information (SIGMETs)**

**SIGMETs will be issued as necessary for:**

**Thunderstorms**

**Tropical Cyclones**

**Severe Turbulence**

**Heavy hail**

**Severe Icing**

**Marked mountain waves**

**Widespread sandstorm/duststorm**

**Volcanic Ash Cloud**

**Tornado**

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# Significant Meteorological Information (SIGMETS)

WSPA10 PHFO 150755

SIGPAW

KZOA SIGMET WHISKEY 3 VALID 150800/151200 PHFO

OAKLAND OCEANIC FIR. SEV MX ICE FCST BTN 120 AND 160 WITHIN  
60 NM EITHER SIDE OF LINE N2830 W15012 - N2336 W15548. MOV E  
10 KT. NC. BASED ON PILOT REPORTS.

WCPA12 PHFO 151513

WSTPAY

KZOA SIGMET YANKEE 16 VALID 151515/152115

OAKLAND OCEANIC FIR. HURCN AKA NEAR N1212 E16230 AT 1200 UTC.  
ACT TS OBS BY SATELLITE WITHIN 60 NM EITHER SIDE OF LINE  
N1430 E16130 - N1200 E16430 - N0730 E16300. CB TOPS FL450.  
MOV WNW 10 KT. INTSF. OUTLOOK VALID 161200 UTC  
N1318 - E16042. SEE LATEST RJTD ADVISORY.

# **AIRman's METeorological Advisory (AIRMETS)**

- **To inform in-flight aviator of potentially hazardous weather that is occurring or is expected to occur along their routes of flight.**
- **Also serve as pre-flight weather briefings**
- **Thresholds for issuance are lower than for SIGMETs**
- **Of particular concern to VFR rated pilots**

# **AIRman's METeorological Advisory (AIRMETS)**

**AIRMETS will be issued as necessary for:**

**Moderate icing**

**Moderate turbulence**

**Sustained surface wind speeds of 30 knots or more**

**Ceilings less than 1000 ft and/or visibility less than 3  
miles affecting an area 1 x 1 degree or more...roughly  
equivalent to 360 square**

**Significant areas of mountain obscuration**

# AIRman's METeorological Advisory (AIRMETS)

NO SIGNIFICANT IFR EXP.

=HNL T WA 040400

AIRMET TANGO FOR TURB VALID UNTIL 041000

.  
AIRMET TURB...KAUAI AND OAHU  
OVER AND IMT S THRU W OF MT.  
TEMPO MOD TURB BLW 090. COND CONT BEYOND 1000Z.

.  
AIRMET TURB...HI  
ENTIRE AREA.  
TEMPO MOD TURB BTN FL200 AND FL250. COND CONT BEYOND 1000Z.

=HNL Z WA 040400

AIRMET ZULU FOR ICE AND FZLVL VALID UNTIL 041000

.  
NO SIGNIFICANT ICE EXP.

.  
FZLVL...120



# Protecting Aviation from Volcanic Ash





## Major Volcanoes of the Mariana Islands

- Pagan last erupted 1981
- Anatahan's last major eruption was April, 2005

# Volcanoes of the Marianas

## “On Fire”



Pagan Island from space,  
after 1981 eruption.



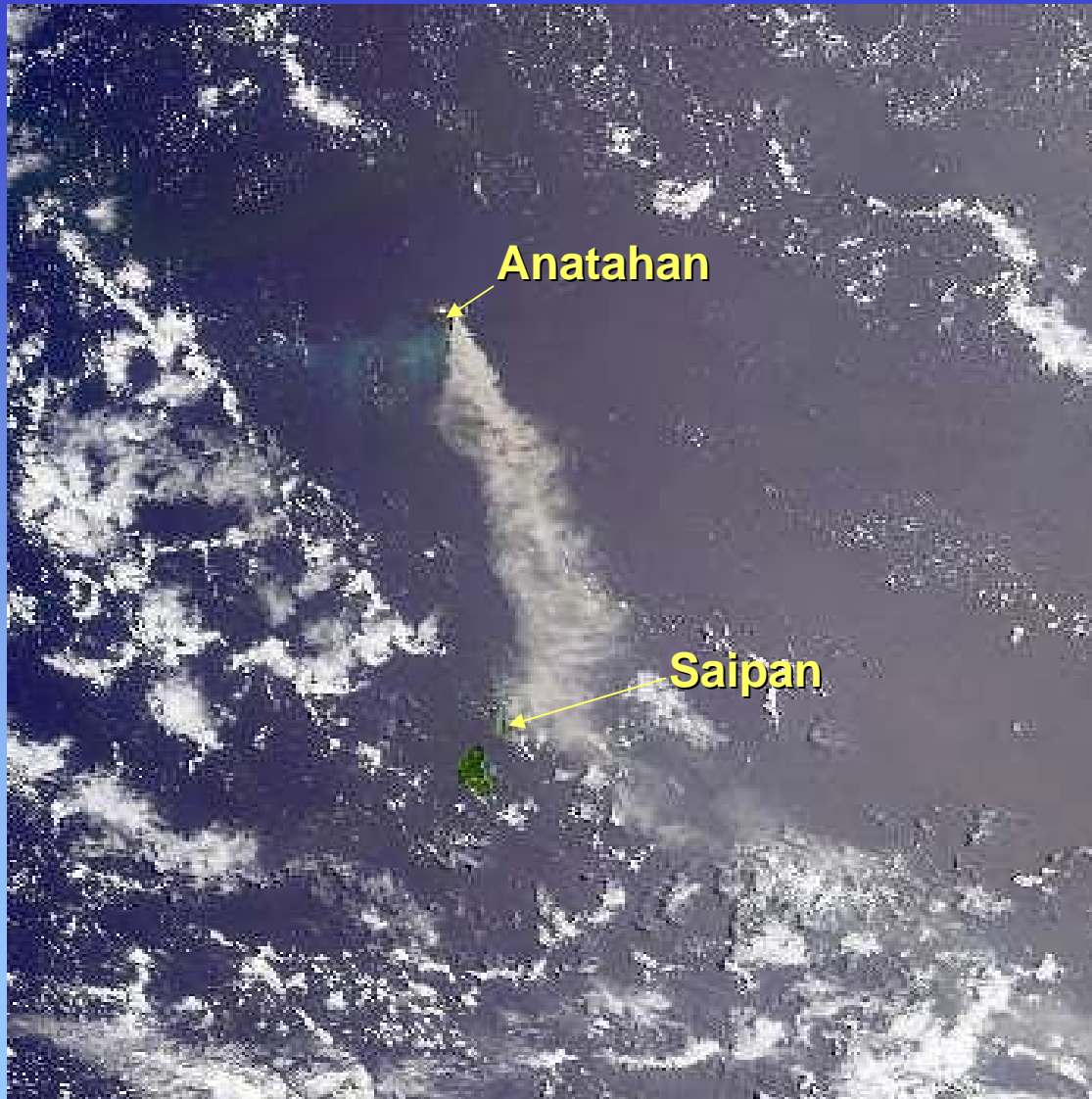
A pulse of  
activity seen by  
plane on June  
16<sup>th</sup>, 2003,  
Anatahan.



April 4-6, 2000

May, 2003, Anatahan's first  
eruption in recent history.

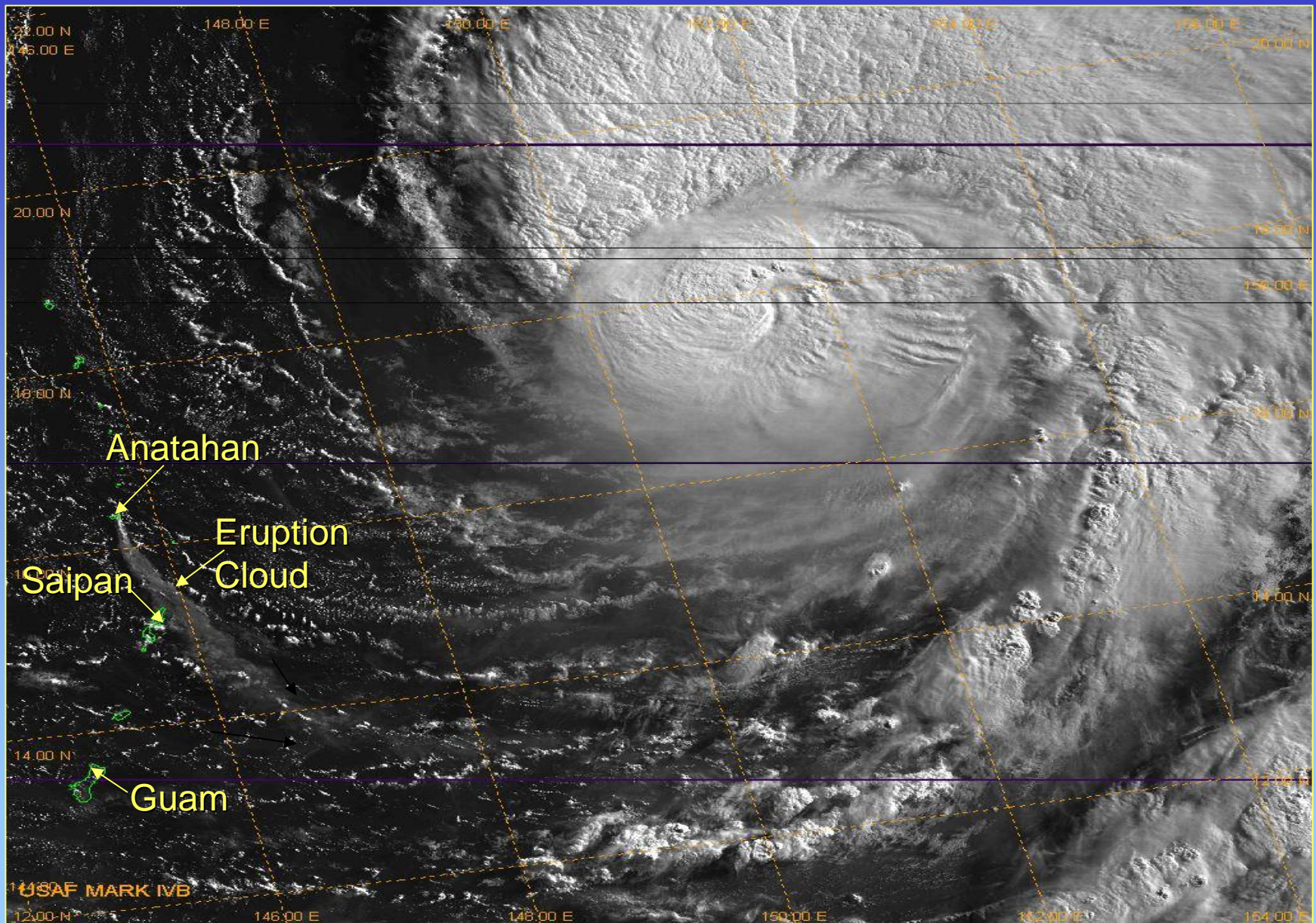
# Ash Cloud affecting Saipan



- This NASA, MODIS high- resolution satellite visible imagery shows the ash cloud (gray in image) spreading south from the Anatahan Volcano.
- Typhoon Chan-hom, east of the Marianas, caused the north winds, blowing the ash cloud toward Saipan and Guam.
- Light ash fall on Saipan and Guam temporarily closed both international airports. May 23, 2003



# Typhoon Chan-hom and Anatahan

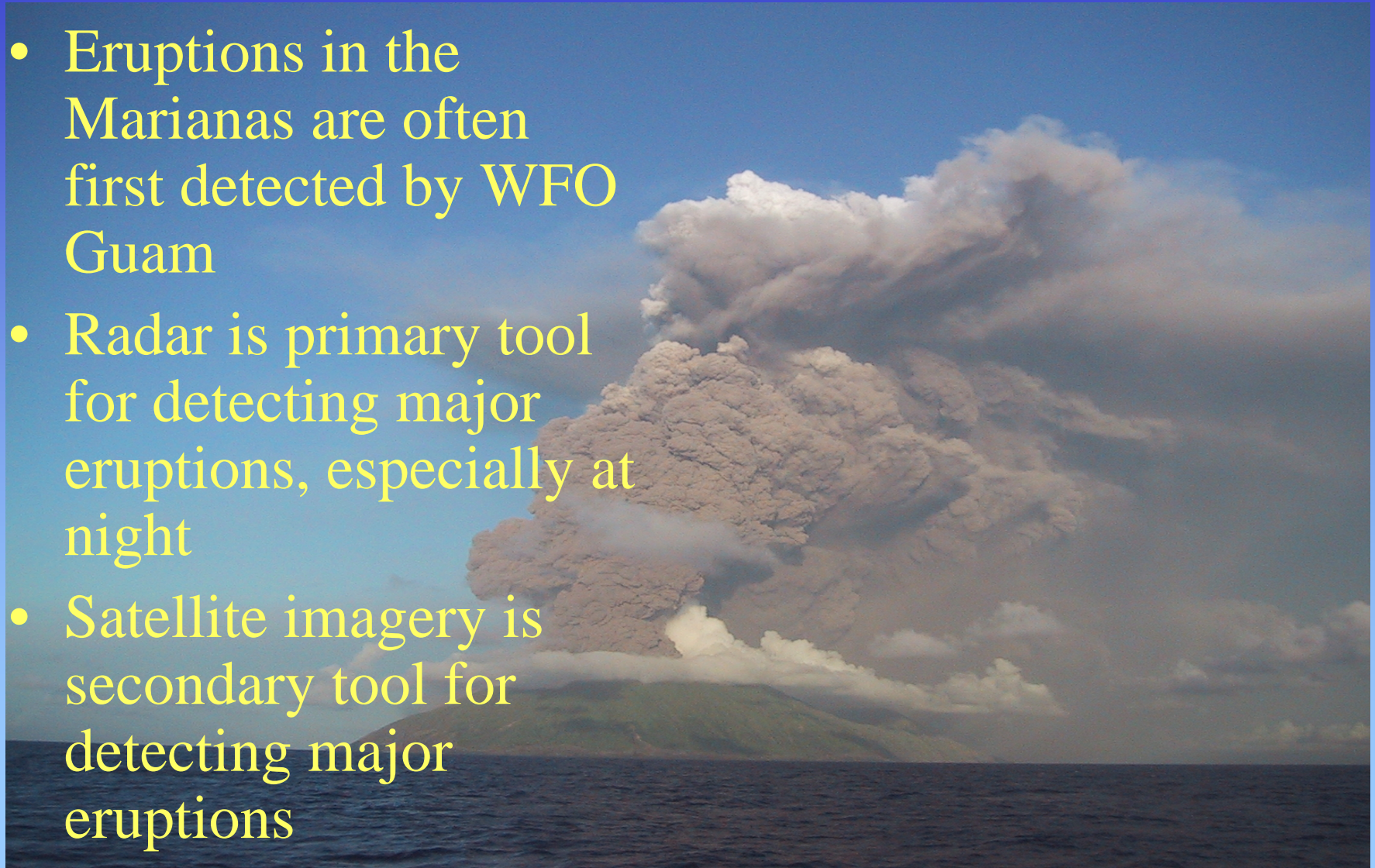


April 7-8, 2000



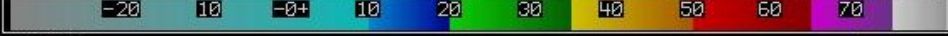
# Detecting Eruptions at WFO Guam

- Eruptions in the Marianas are often first detected by WFO Guam
- Radar is primary tool for detecting major eruptions, especially at night
- Satellite imagery is secondary tool for detecting major eruptions



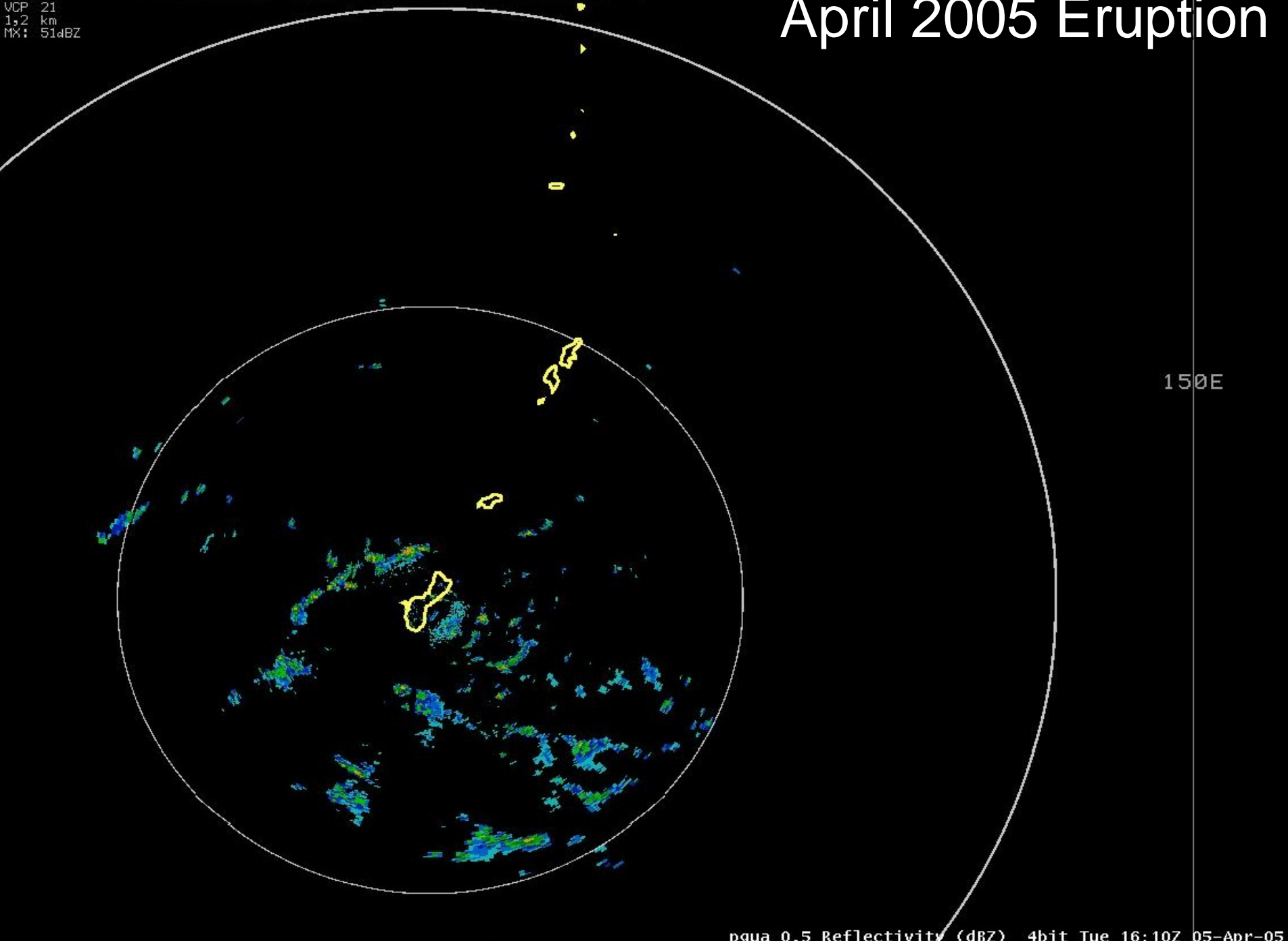
April 4-6, 2006





VCP: 21  
1.2 km  
MX: 51dBZ

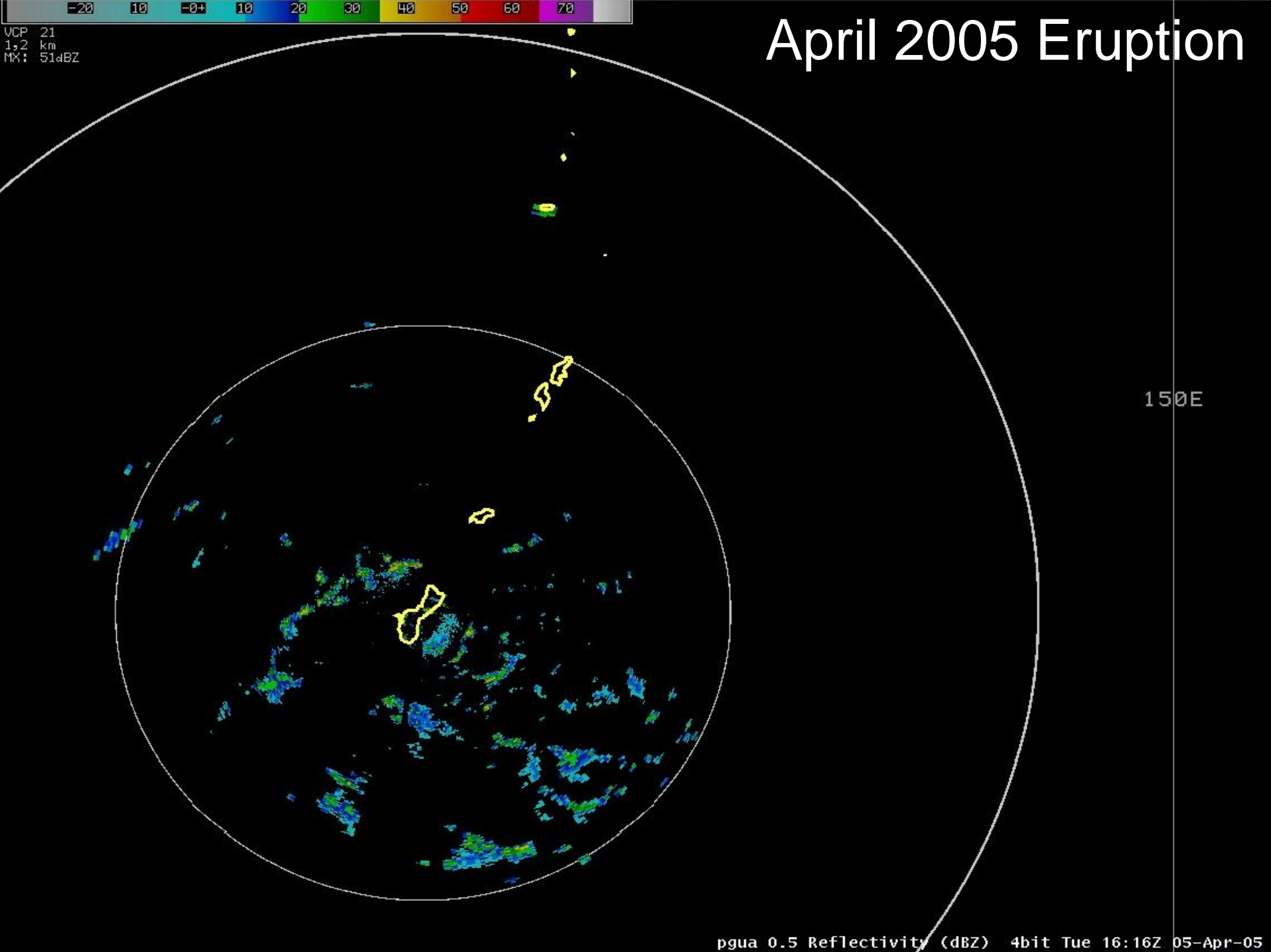
# April 2005 Eruption



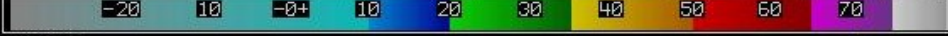


VCP 21  
1.2 km  
MX: 51dBZ

# April 2005 Eruption



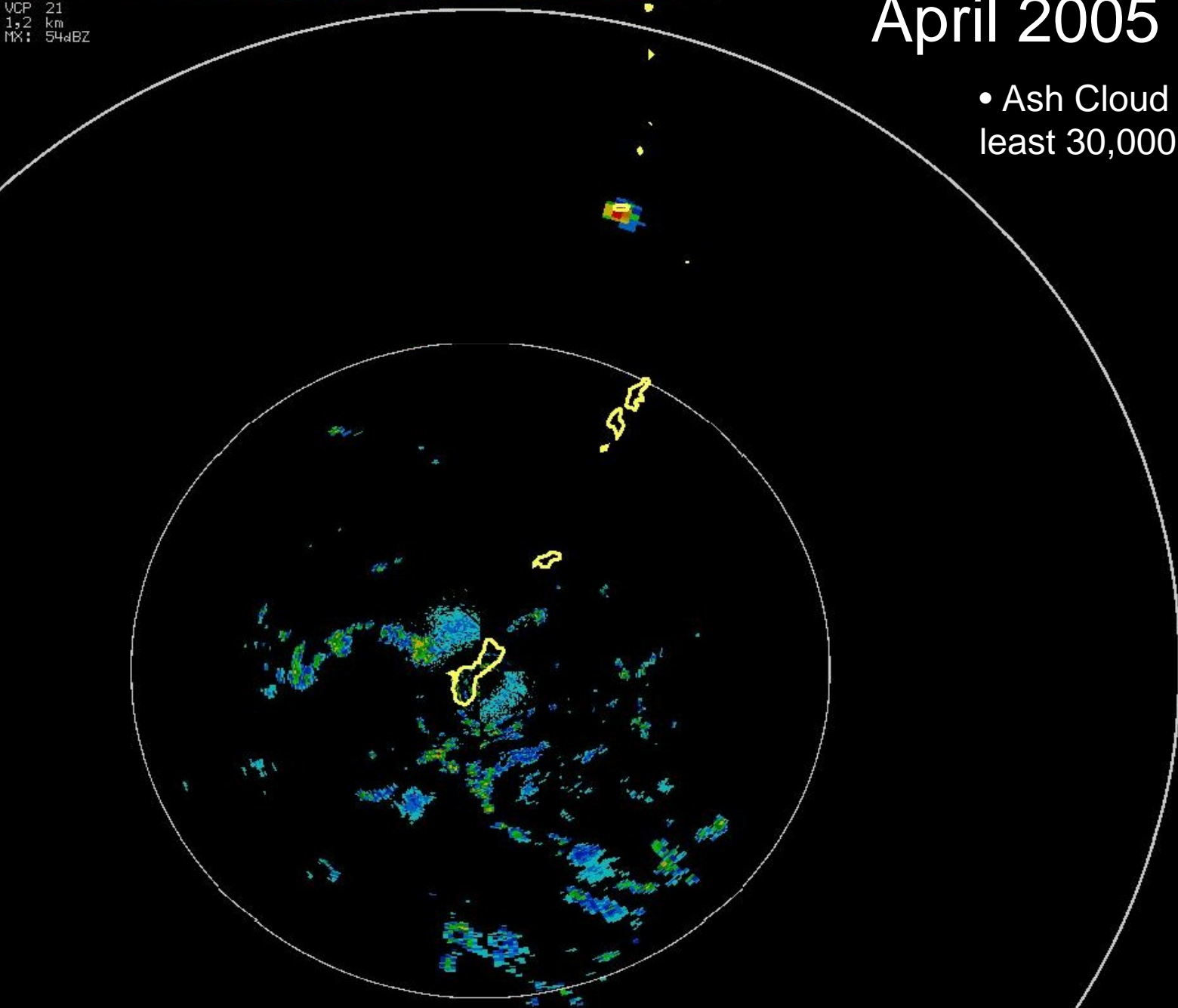
150E



VCP: 21  
1.2 km  
MX: 54dBZ

# April 2005 Eruption

- Ash Cloud has reached at least 30,000 feet



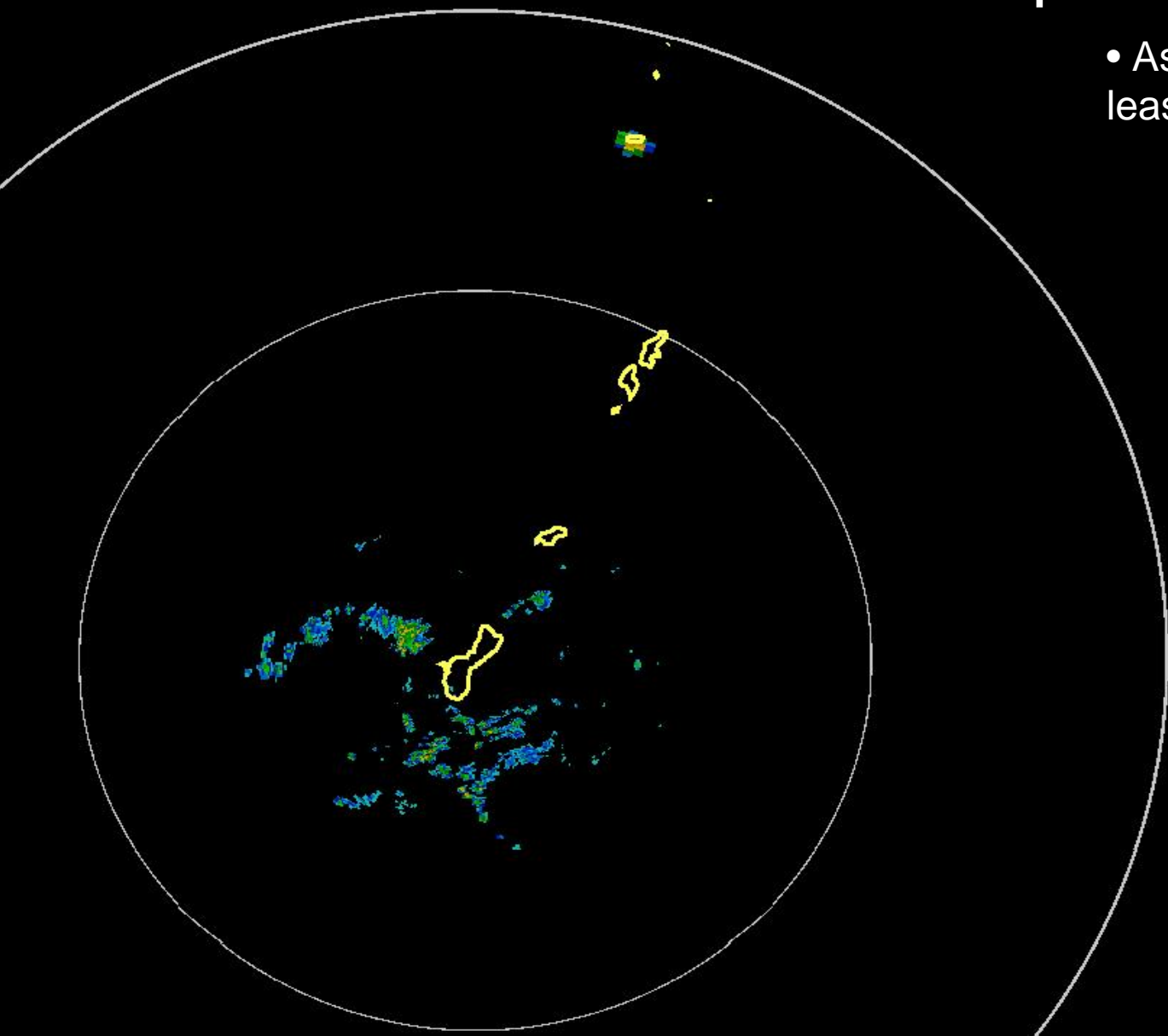
150E



VCP 21  
1.2 km  
MX: 50dBZ

# April 2005 Eruption

- Ash Cloud has reached at least 50,000 feet



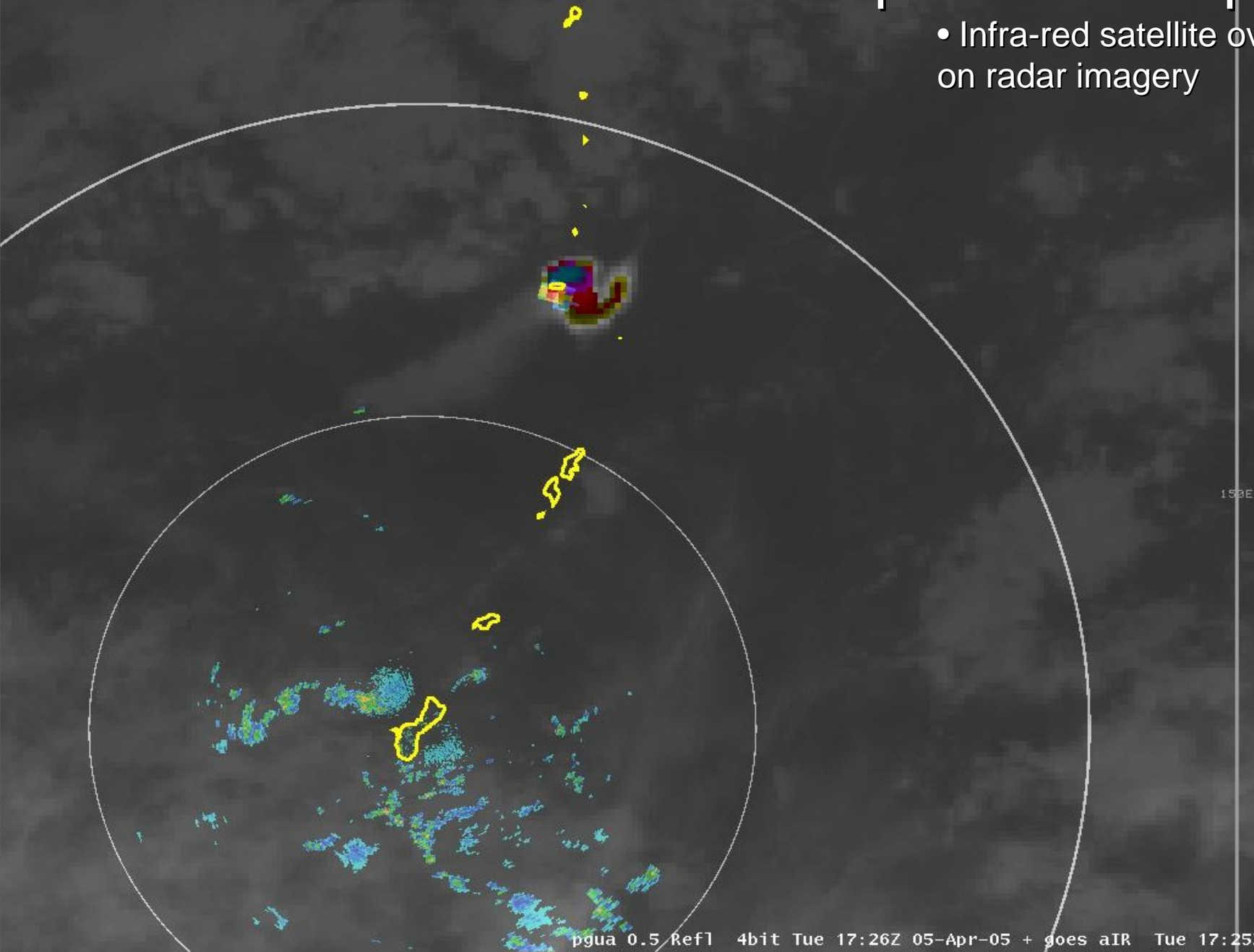
150E



VDP 21  
1.2 km  
MX: 54dBZ

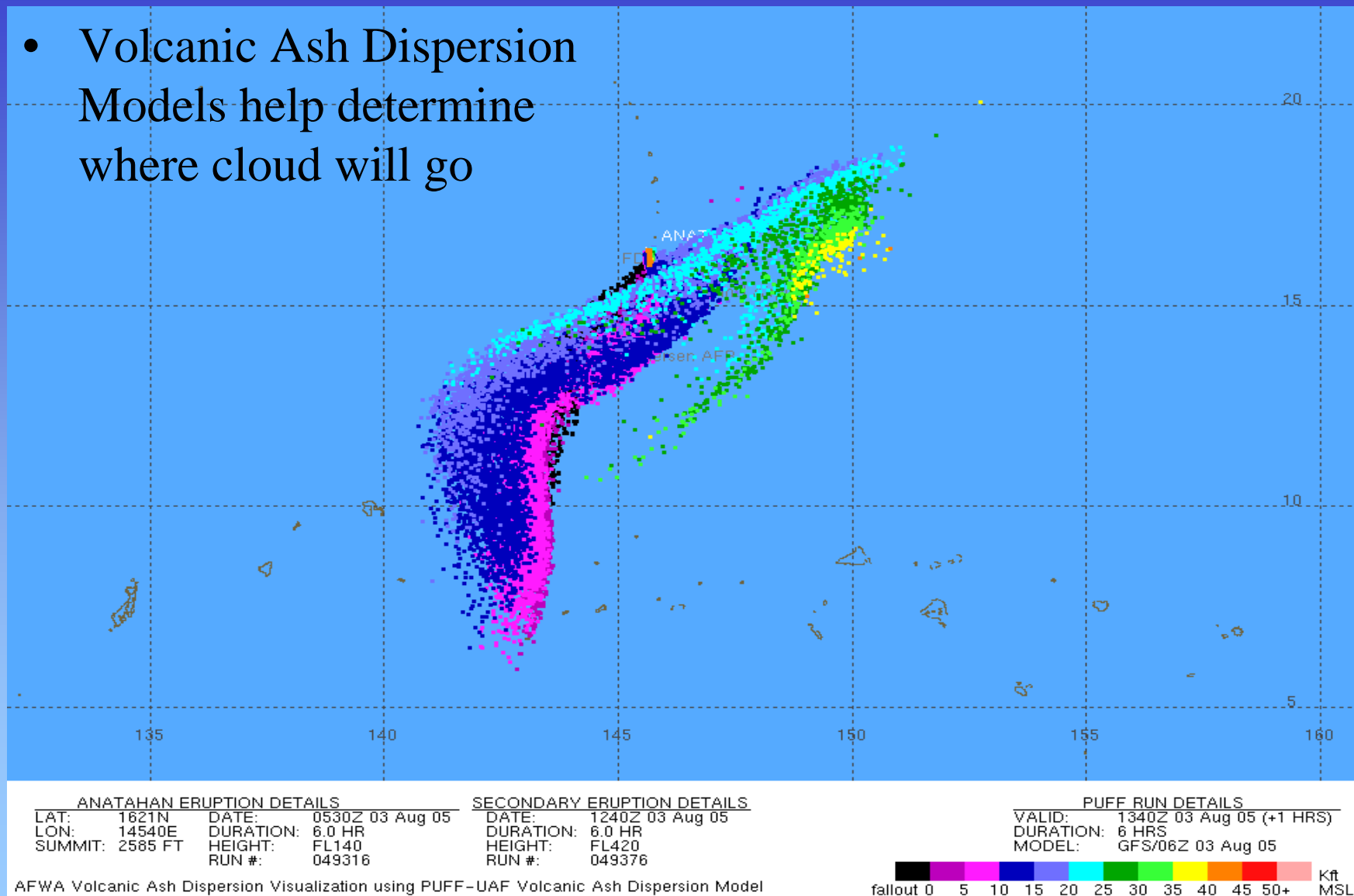
# April 2005 Eruption

- Infra-red satellite overlay on radar imagery



# Monitoring Ash Cloud

- Volcanic Ash Dispersion Models help determine where cloud will go

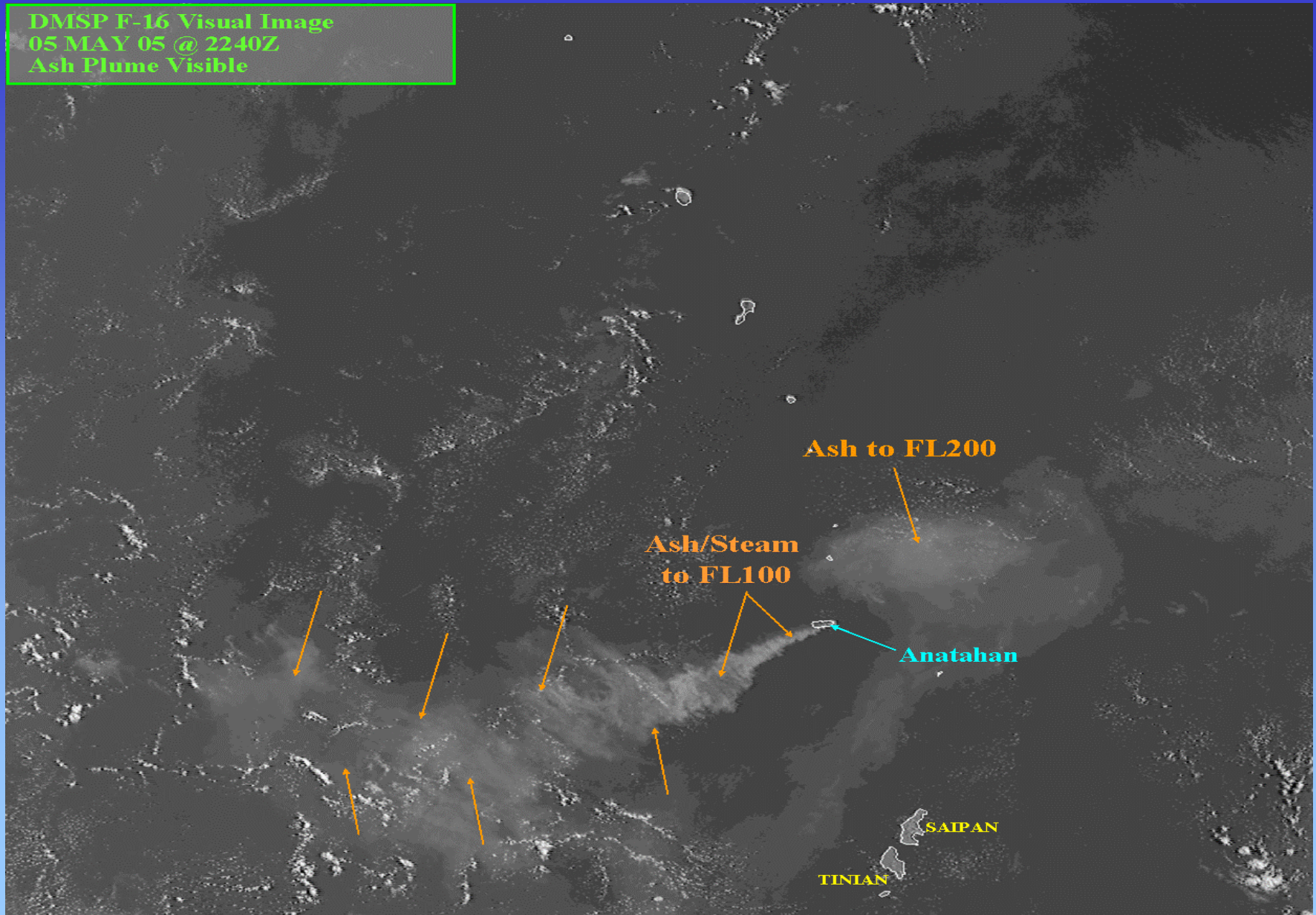


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# Monitoring Ash Cloud

DMSP F-16 Visual Image  
05 MAY 05 @ 2240Z  
Ash Plume Visible



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# Weather Forecast Office Honolulu



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# Weather Forecast Office Guam





# Majuro Weather Service Office

- Groundbreaking ceremony done
- New site on airport
- Expected date of completion around February 2007



# Palau Weather Service Office

- To relocate to Airport 2008. Site survey done.



# Chuuk Weather Service Office



- To Expansion in 2010



# Pohnpei Weather Service Office



- Located in Kolonia
- To relocate to airport in 2010

# Yap Weather Service Office

- Relocated and dedicated in 2004.



# Hawaiian Islands



- Completion May 2006



- Relocated within Airport Oct 2005

# American Samoa Weather Service Office

- New building dedicated in 2004.
- Plan to upgrade to a Weather Forecast Office (WFO)



# COMMUNICATIONS

- AFTN/MET is current system in place for Micronesia and Samoa
- AISR expected to replace AFTN/MET
- AISR already set up at all airport and WSO locations
- Goal is to disconnect AFTN/MET
- Teleconference scheduled on Friday

# Contact Information

National Weather Service WFO Guam

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Barrigada, Guam 96913

671-472-0950/1/2

*<http://www.prh.noaa.gov/guam>*



# Si Yu'os Ma'ase

